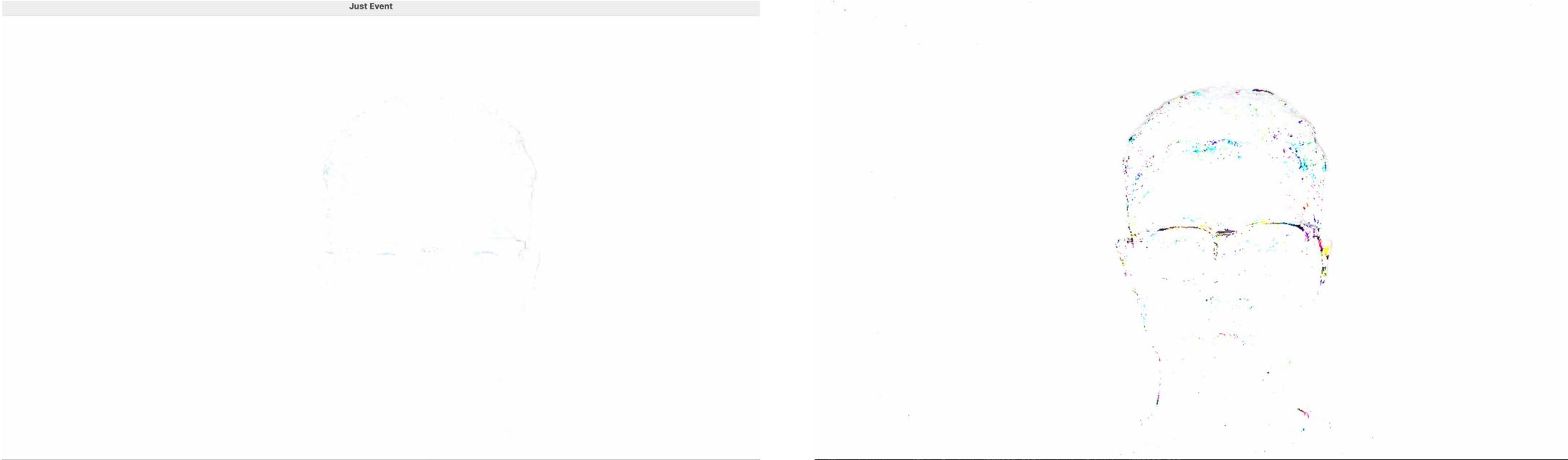


EE5110 Segment B

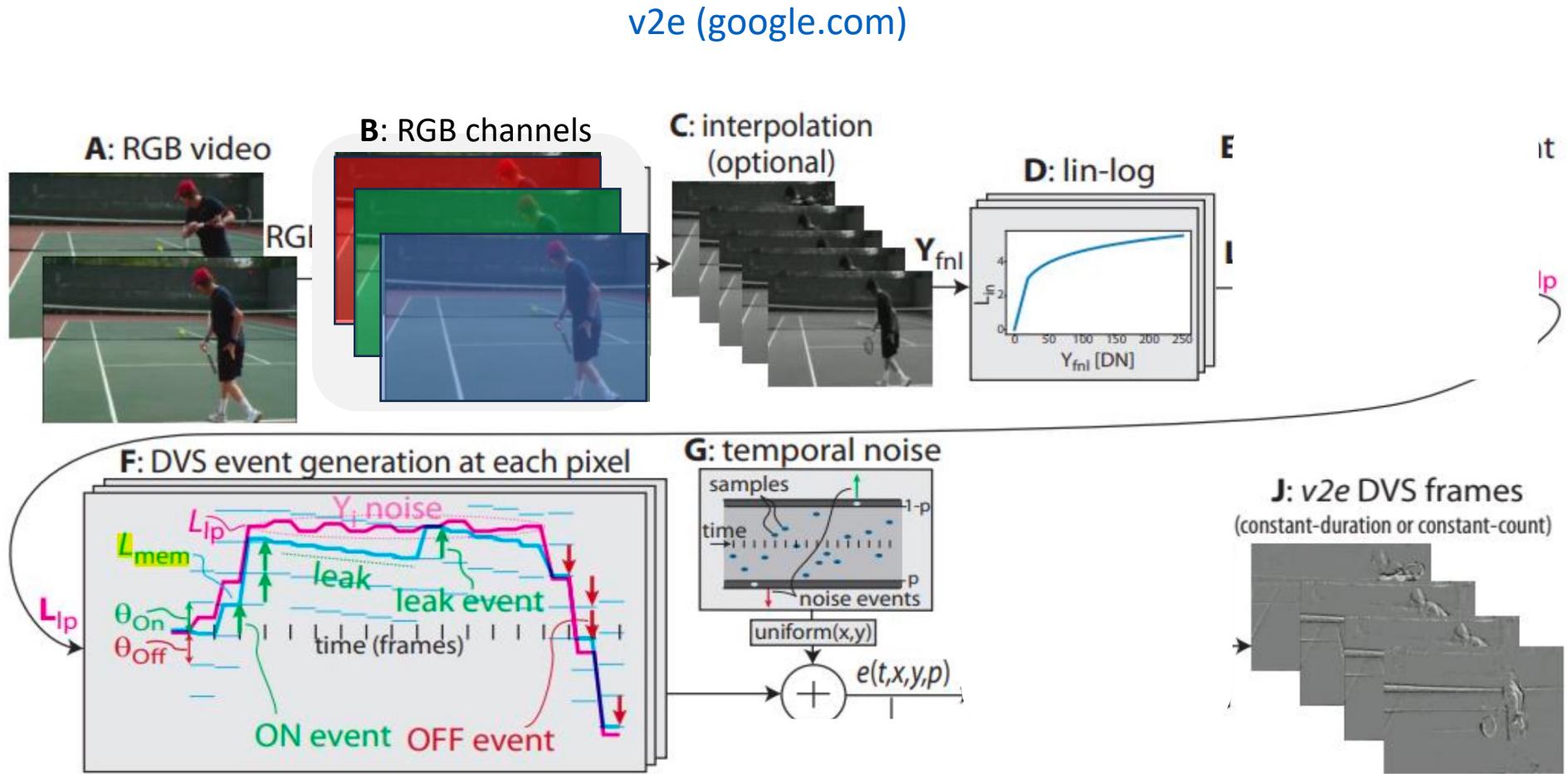
Event Camera Simulator



Final Output



The processing flow



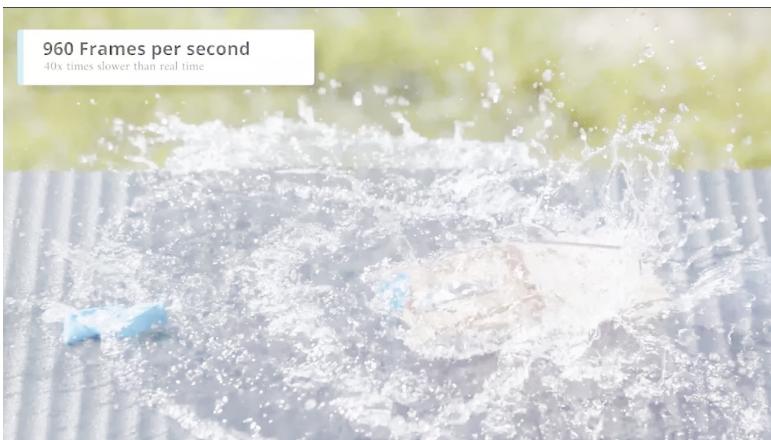
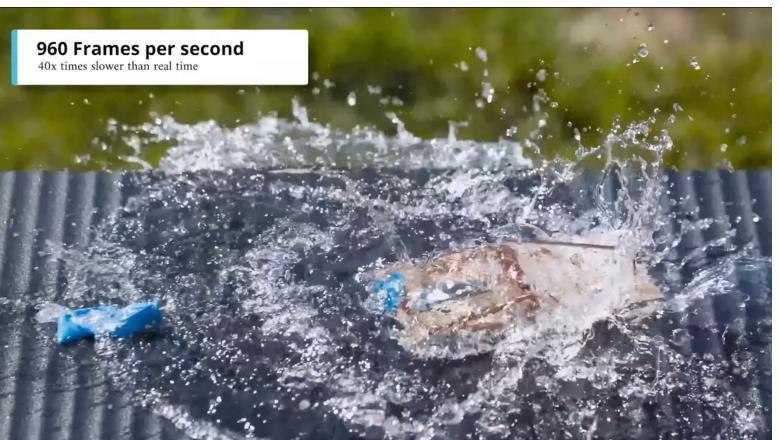
Interpolate frame

Linear interpolation

```
int interpolated_frame_num = 1;  
float alpha = 0.5;  
addWeighted( src1: frame_last, alpha: 1 - alpha, src2: frame_current, beta: alpha, gamma: 0, dst: interpolated_frame);
```



Log operation



Log operation



No Log operation



With Log operation

Log operation



No Log operation + difference



With Log operation + difference

Noise

960 Frames per second
40x times slower than real time

960 Frames per second

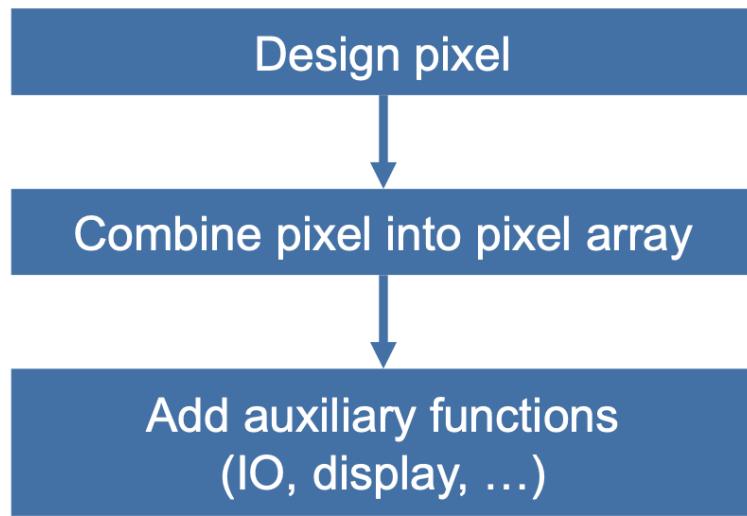
40x times slower than real time

960 Frames per second
40x times slower than real time

960 Frames per second

40x times slower than real time

Design process & Code structure

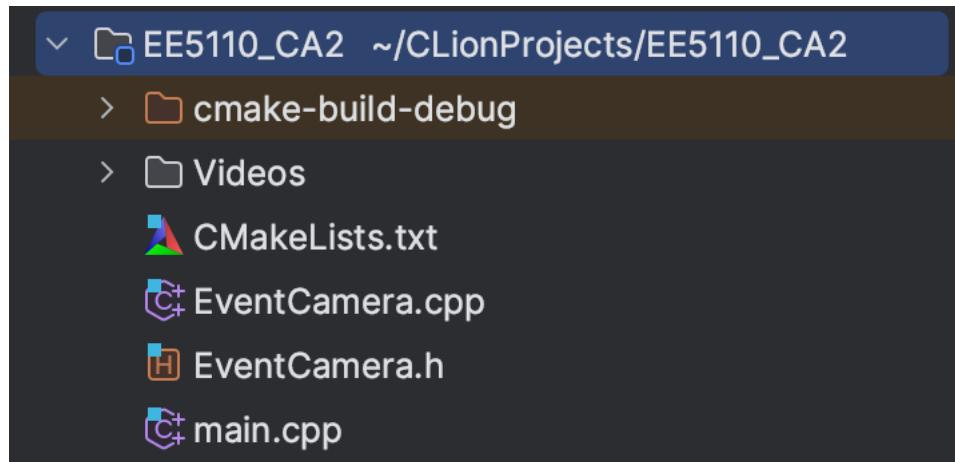


Main.cpp: Program entrance.

EventCamera.h: Head file for EventCamera, including key functions of event camera simulator, such as detecting event, log operation, add noise, Interpolate frame etc.

EventCamera.cpp: Function realization.

Videos: Contain input, output videos and test images.



Other test & Further consideration

Blur the image can reduce the noise?

Edge detection can improve the result?

Running efficiency?

Output data compression?

Conclusion

1. Have a deeper understanding of how event camera works.
2. Know the general effect of noise, illuminance, frame speed to event camera.
3. A chance for me to pick up C++ programming ability.
4. Have a general idea of how various algorism used in event camera.

Reference

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https://github.com/cogsys-tuebingen/event_simulator_ros

<https://github.com/Alex-No-Bug/EventCamera/blob/master/1.cpp>

<https://github.com/SirTedDonGollcio/Event-Camera>

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